

## APPENDIX - B

### HISTORY AND NOTATION :

Resource control programming (RCP) is the result of my research in parallel computing which started in 1990. The aim of this research is to create building blocks similar to the building blocks of digital electronics like AND GATE and OR GATE. The Rcp Gate is the result of this research, and is considered as a building block, in the development of multithreaded applications.

Consider a Rcp Gate G1, which is controlling a node function N1, which has say 2 invocations. Further assume that QA1 is the input queue array and QA2 and QA3 are the output queue arrays of the Rcp Gate. Assume that L1 is the local ring to which the Rcp gate is connected. A simple way of describing this information is as follows :

$$\{QA1\} \rightarrow G1\{N1[2], L1\} \rightarrow \{QA2[8], QA3[8]\}$$

This form is called short hand form, and although it is less illustrative than the block diagrams, it is useful for describing simple configurations.

It may be noted that curly braces hold the lists, and square braces hold the sizes, and parentheses are used to denote a particular instance, like the invocation of a node function, which is denoted by N1(1), or a particular queue in the queue array, which is denoted as QA1(1), or QA2(5). The queue array sizes are shown only once.

In the absence of input queue arrays, the Rcp Gate is represented as :

$$G1 \{N1[2], L1\} \rightarrow \{QA1[8], QA2[8]\}$$

In the absence of output queue arrays, the Rcp Gate is represented as :

$$\{QA1\} \rightarrow G1 \{N1[2], L1\}$$